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A simple apparatus for holding paper chromatograms during equilibration and development

The variation in R_F values encountered when reversed-phase paper chromatograms are developed before coming to equilibrium¹ led us to construct an apparatus for holding the undeveloped chromatograms in a saturated atmosphere for some hours, enabling us to lower the chromatograms into the solvent without taking off the lid of the tank. The device is suitable for ascending chromatograms only. It consists of a frame that fits into the standard (22 × 22 × 10 cm), rectangular, glass chromatography tanks² and will allow the simultaneous equilibration of two papers. Although it is possible to develop more sheets simultaneously on conventional frames in larger tanks³ the atmosphere in these may not be so evenly saturated because the end chromatograms are adjacent to the paper lining the walls of the tank while the middle papers are between other, unequilibrated sheets.

The apparatus (Fig. 1) consists of a stainless steel or aluminium frame (depending on the solvents used) with adjustable feet that can compensate for any irregularity in the floor of the glass tank. Three lateral bars hold the structure rigid and prevent the paper lining the tank from touching the chromatograms should it become detached from the walls. The centre holes in the end sections hold a glass rod carrying a sheet of paper saturated with solvent.

The chromatograms are suspended by small wire loops from a narrow glass tube (0.5 cm diam.), a strong cylindrical magnet (0.3 cm diam.) being fitted into each end with like poles towards the centre. The glass tubes should be as long as possible without the magnets touching the walls of the tank. Soda glass tubes are preferable

J. Chromatog., 20 (1965) 180-181

because they can be heated in the centre and easily stretched or compressed to the exact length. During equilibration the glass rods rest on the knife edges A and A'; development is commenced by bringing the like poles of two strong bar magnets up to the tank and repelling the magnets in the glass tube so that they fall into positions B and B'. The knife edges have to be straight and sharp to reduce friction with the

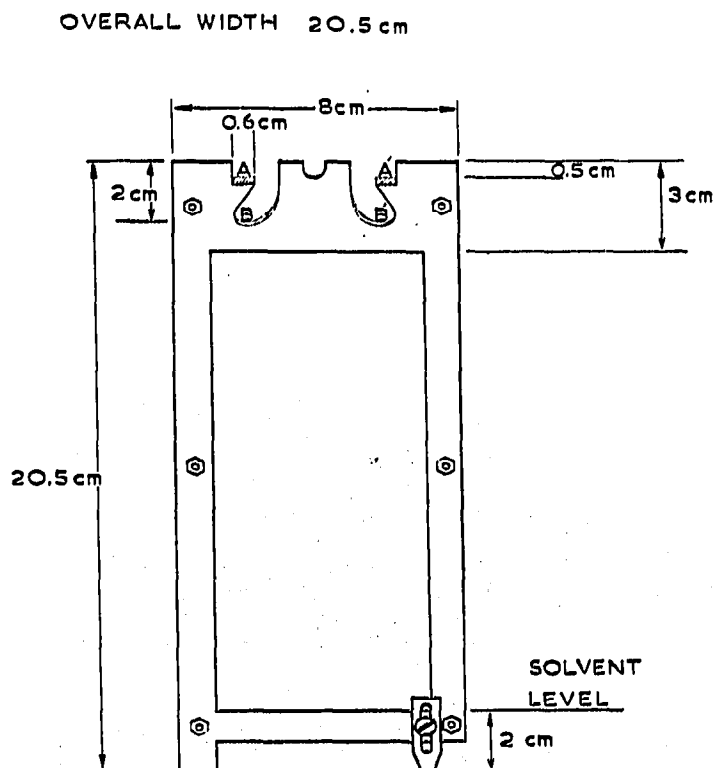


Fig. 1. Diagram of an end section showing the knife edges and the adjustable foot

glass tubes. The paper chromatograms measure 17×17 cm and when impregnated papers are used it is convenient to cut off strips of 1.5 cm from all four margins of 20×20 cm sheets that have been dipped and dried, thereby removing the heavily impregnated edges. Spots are applied 2 cm away from the lower margin so that 0.5 cm of the paper is immersed in the mobile solvent provided that the upper edge of the paper touches the glass cylinder. The magnetic operation obviates the need to open the lid in order to lower the paper into the solvent or to pour in extra solvent. It is also possible to enclose the frame in a polythene bag instead of a glass tank.

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